

An Introduction to the School Climate Measure

Keith J. Zullig, PhD
Professor
Department of Social and Behavioral Sciences
School of Public Health
West Virginia University
Morgantown, WV

Molly R. Matthews-Ewald, PhD
2M Research Services, LLC
Arlington, TX

E. Scott Huebner, PhD
Professor
Department of Psychology
College of Arts and Sciences
University of South Carolina
Columbia, SC

Abstract

The School Climate Measure (SCM) is a comprehensive measure of school climate that has demonstrated significant psychometric support and available free of charge. The goal of this research-informed commentary is to provide readers with necessary knowledge to make an informed decision of the appropriateness of the SCM for use in their school or district. First, we review the development of the SCM with supporting peer-reviewed research. Second, we discuss the advantages of the SCM and ease in interpretation of scores. Finally, SCM applications are reviewed along with promising future steps. We conclude that the SCM can provide a comprehensive *and* nuanced look at students' school environment perceptions, yielding valuable hypotheses about their school behavior, subjective well-being, and academic success.

Key Words

school climate, assessment, school climate measure

In 2016, approximately 50.6 million children and adolescents were enrolled in public (non-charter) elementary and secondary schools the United States (NECS, 2019). School is one of the most important locations where children and adolescents acquire social skills and experience an increased sense of autonomy and personal expression (O'Malley et al., 2015).

Moreover, because schools are places where students develop behavioral patterns that may follow into adulthood (Eccles et al., 2011; Spengler et al., 2016), it is important that their school experience is positive in order to promote optimal educational and health-related outcomes. As such, researchers continue to examine the construct of school climate to determine how a student is influenced by her or his school environment.

Broad consensus of a definition of school climate remains challenging. However, it is clear that definitions have moved away from an exclusive focus on physical environments to conceptualizing school climate as a measure of a student's subjective school experience (Cohen, 2006; Zullig et al., 2015). Specifically, school climate is "... based on patterns of people's experiences of school life and reflects norms, goals, values, interpersonal relationships, teaching and learning practices, and organizational structures" (Cohen et al. 2009, p. 182), as well as feelings of safety, including order and rules and social and emotional safety (Cohen et al., 2009).

It is also clear there remains a relative dearth of psychometrically sound measures available to assess students' perception of their school's climate. More problematic is the lack of available measures that are (a) low burden and practical to administer, (b) designed for universal assessment (i.e., all students), and (c) free or inexpensive to use. These factors are

important considerations for practicing professionals with limited budgets.

Development of School Climate Measure

Given these challenges, Zullig, Koopman, Patton, and Ubbes (2010) initiated a study to review the most widely historically cited self-report (i.e., subjective) school climate measures with the goal of developing a low-burden, psychometrically sound measure that would be free to the public and designed for universal assessment.

The result of this work led to the creation of the School Climate Measure (SCM), which contained 39 items measuring eight domains of school: 1. Positive Student-Teacher Relationships (9 items), 2. School Connectedness (6 items), 3. Academic Support (6 items), 4. Order and Discipline (7 items), 5. School Physical Environment (4 items), 6. School Social Environment (2 items), 7. Perceived Exclusion/Privilege (3 items), and 8. Academic Satisfaction (2 items). All items use the same Likert response option format: (*strongly disagree* [1] ... *strongly agree* [5]).

Shortly after its development, the publicly available and free-to-use SCM was included in the PhenXToolkit (see Hamilton et al., 2011, for a review) as its measure of school climate. The PhenXToolkit was funded by the National Human Genome Research Institute to compile a core set of high-quality, well-established, low-burden measures intended for use in large-scale genomic studies.

To date, the SCM has undergone five studies examining its psychometric properties which are described next. The first study was conducted with 2,049 public school students (predominately White) from Ohio (Zullig et al., 2010).

The second and third studies were conducted in partnership with the Arizona Department of Education utilizing diverse public high school samples of 21,082 students (49% were non-White Hispanic) (Zullig et al., 2014) and 1,634 (80% were non-White Hispanic), respectively. More recently, a validation study was completed on a sample of 1,128 predominantly White (79%) public middle school students in the Central Appalachian region of the United States (Daily et al., 2018).

The first study by Zullig and colleagues (2010) randomly split the sample into exploratory and confirmatory samples and subjected the two halves to factor analytic and structural equation modeling techniques. Structural equation modeling revealed that the fully correlated model was found to fit the data well in the exploratory sample: $\chi^2 = 1166.78$ ($df = 674$, $p < .0001$), CFI = .95, TLI = .94, RMSEA = .04, goodness-of-fit index (GFI) = .91.

The fully correlated factor structure was then fit to the confirmatory sample. The model also fit the data well: $\chi^2 = 1245.37$ ($df = 674$, $p < .0001$), CFI = .95, TLI = .95, RMSEA = .04. Overall, the GFI was .91. Exploratory and confirmatory factor analysis results confirmed an eight-factor solution (loadings with absolute values = .40). Item factor loadings ranged from .42 to .87. Coefficient alphas ranged from .65 to .91.

The second study (Zullig et al., 2014) was a replication and extension of the Zullig et al. (2010) study (described above). In the 2014 study, confirmatory factor analysis was performed, and factor loadings ranged from .45 to .92. Structural equation models also fit the data well: $\chi^2 = 14325$ ($df = 293$, $p < .001$), CFI = .95, TLI = .95, RMSEA = .05. In this

replication study, the GFI was .94. Coefficient alphas ranged from .82 to .93.

In addition, large effect sizes were demonstrated between the SCM constructs and U.S. Centers for Disease Control and Prevention Youth Risk Behavior Survey school safety items and self-reported grade point average (GPA), most notably between academic support and (a) weapon carrying at school ($d = .77$), (b) being threatened or injured by a weapon at school ($d = .61$), (c) feeling safe at school ($d = .66$), (d) and GPA ($f = .40$). These analyses revealed that greater perceptions of a positive school climate were significantly associated with greater (and practically important) perceptions of school safety.

The third study (Zullig et al., 2015) expanded the original 8 domains to 10 with the inclusion of an Opportunities for Student Engagement domain and a Parental Involvement domain. The rationale for including an Opportunities for Student Engagement domain was consistent with Audas and Willms' (2001) definition of engagement, which they describe as the extent in which students believe they can participate in academic and nonacademic activities freely and equally (regardless of gender) without feeling excluded or disrespected for their differences.

In addition, the domain of parental involvement in schooling has long been shown to contribute to a school's climate (e.g., Haynes, Comer, & Hamilton-Lee, 1989; Hoover-Dempsey, Bassler, & Brissie, 1987). In this study, the eight original SCM domains (Positive Student-Teacher Relationships, School Connectedness, Academic Support, Order and Discipline, Physical Environment, Social Environment, Perceived Exclusion, and Academic Satisfaction) and two newly

developed domains (Parental Involvement and Opportunities for Student Engagement) were subjected to psychometric analysis. Like the first study (Zullig et al., 2010), the sample was randomly split into exploratory and confirmatory halves and subjected to factor analytic and structural equation modeling techniques.

Factor analysis confirmed a 10-factor solution (loadings with absolute values $> .40$). Item factor loadings ranged from .47 to .95. Coefficient alphas ranged from .70 to .92. Fit statistics indicated a good fitting model ($\chi^2 = 1452.67$ (df = 734, $p < .01$), CFI = .94, TLI = .93, RMSEA = .039). This process eliminated some original SCM items, such that the overall SCM increased only from 39 to 42 items with the newly developed domains. The current, 42-item version of the SCM is included in Appendix A at the end of the article.

The fourth study (Daily et al., 2018) assessed the psychometric properties of the SCM in a public middle school student population. In this study, confirmatory factor analysis confirmed all 10 domains with loadings ranging from .66 to .90 with strong internal consistency estimates (range .79 to .93), suggesting the saturation of items fit well within the latent constructs. Overall, the factor model fit the data well ($\chi^2 = 2132.5$ (774), $p = < .0001$), CFI = .95; TLI = .94; RMSEA = .03.

Additionally, known-groups validity analyses comparing each SCM domain against self-reported academic achievement and school contentment showed that the students who reported higher academic achievement and school contentment demonstrated higher positive perceptions of school climate. This study examining the psychometric properties of the SCM also provided evidence that extended its use to early adolescents.

Finally, a fifth study involved a demonstration of the convergent and discriminant validity of the SCM total score. Consistent with expectations, the SCM correlated significantly with measures of adolescents' school satisfaction, global life satisfaction, and health-related quality of life; however, it correlated most highly with adolescents' school satisfaction scores, and less highly with their global life satisfaction and health-related quality of life scores (Zullig, Ward, Huebner, & Daily, 2018).

SCM Advantages and Interpretation

Aside from the SCM's psychometric support, ease of use, and accessibility, a distinct advantage of its use is its breadth of domains and multidimensional nature. In short, although a unidimensional total school climate score can be computed by combining all domain items, separate scores can be computed for each domain and the 10 domains do not rely on one another for school climate assessment.

For example, as highlighted in our work with the Arizona Department of Education (ADE) with their Safe and Supportive Schools (S3) Grant, ADE personnel selected four SCM domains (Positive Student-Teacher Relationships, Academic Support, Order and Discipline, and School Physical Environment) because these aligned well with their S3 grant responsibilities (see Zullig et al., 2014 for a review). The flexibility of the SCM allows schools and school districts to pick and choose which SCM domains match their school improvement efforts best in formative and summative evaluations.

Nationally normative data for the SCM are not yet available; however, understanding student perceptions and knowing whether students agree or disagree with various statements within the domains is arguably of considerable importance. With that said, we

offer the following interpretations based on the absolute scores based on data gathered to date in Table 1. Higher mean scores within each

SCM domain indicate more positive school climate perceptions.

Table 1

Rating and Interpreting Participants' View of School Climate with the SCM

Rating Scale	Adjectival Rating	Mean Interval Scale	Verbal Interpretation and Description
5	Strongly Agree	4.20 – 5.00	Very Positive School Climate
4	Agree	3.40 – 4.19	Positive School Climate
3	Neither agree nor disagree	2.60 - 3.39	Neither Positive nor Negative School Climate
2	Disagree	1.80 – 2.59	Negative School Climate
1	Strongly Disagree	1.00 – 1.79	Very Negative School Climate

Based on the scale provided in Table 1, the data results can be interpreted as:

Very positive school climate

Participants perceive the school climate as *very positive*, indicating that they strongly agree that their school climate excellently meets the factors that make the school environment good for students.

Students feel very comfortable, safe, and valued in an environment where they can interact with trustworthy people who care for them.

Positive school climate

Participants perceive the school climate as *positive*, indicating that they agree that their school climate satisfactorily meets the factors that make the school environment good for students. Students feel comfortable, safe, and valued in an environment where they can interact with trustworthy people who care for them.

Neither positive nor negative school climate

Participants perceive the school climate as *neither positive nor negative*, indicating that they neither agree nor disagree that their school

climate meets the factors that make the school environment good for students. Mean scores near or under 3.00 in any domain may be a concern, however, and should be further evaluated to determine whether additional support for the students may be warranted.

For example, when students cannot decide whether they believe a particular domain is positive or negative, it may be an indicator that not enough is being done at the school in a given domain. This might be especially indicative of a problem if the mean falls below 3.00, particularly if most other domain scores are 3.40 or higher.

Negative school climate

Participants perceive the school climate as *negative*, indicating that they do not agree that their school climate meets the factors that make the school environment good for students. Students feel uncomfortable, unsafe, and unvalued in their school environment.

Very negative school climate

Participants perceive the school climate as *very negative*, indicating that they strongly disagree that the factors are met indicating that school environment appears to be unacceptable for students. Students feel very uncomfortable, unsafe and unvalued in their school environment.

Summary and Applications

Promoting a positive school climate is an international concern. For example, findings from the 2015 Programme for International Students Assessment (PISA) state “Parents are more likely to consider important or very important that there is a safe school environment ... that the school has an active and pleasant climate even more so than the academic achievement of the students in the school” (PISA, 2015: PISA Results in Focus, p.10).

In the United States, the Every Student Succeeds Act (ESSA, 2015) was established to address the shortfalls of the No Child Left Behind Act of 2001. ESSA allows states more control over funding and increased flexibility in school assessments by incorporating at least one accountability measure related to school quality and safety perceived to support student health and academic performance.

Although additional research would be beneficial, the extant evidence suggests that the SCM meets this requirement, and nascent longitudinal research is also encouraging. For example, research by Daily et al. (2020) using the SCM demonstrated that positive perceptions of school climate helped middle school students maintain grades of A/B over time.

More impressive however, was the finding that students with grades of C/D/F demonstrated better academic success when school climate improved, suggesting that the enhancement of school climate may raise “all boats” (Daily et al., 2020).

While the SCM can be used in the context of the population (or sub-populations) of students in a school, it also holds the promise for use with individual students to determine their individual perceptions of the climate of their respective school.

For example, the SCM might be useful with groups of students (e.g., students in a special needs program, gifted students), individual students, and in school-wide assessments in ongoing (multi-time) surveys as well as one-time surveys. In all contexts, given the breadth of the SCM, it should provide a comprehensive *and* nuanced look at students’ perceptions of their school environment, yielding valuable hypotheses about their school behavior, subjective well-being, and academic

success. The profile of scores should be particularly helpful in designing empirically-informed, targeted programs to promote positive school climates.

It should be noted that the SCM is in the public domain and can be used free of charge by interested school psychology researchers or

practitioners (or related professionals) as long as the authors are credited using the following publication: Zullig, K. J., Collins, R., Ghani, N., Hunter, A. A., Patton, J. M., Huebner, E. S., & Zhang, J. (2015). Preliminary development of a revised version of the School Climate Measure. *Psychological Assessment, 27*(3), 1072–1081.

Author Biographies

Keith Zullig is professor and chairperson in the department of social and behavioral sciences at the West Virginia University School of Public Health. He is an advocate for promoting optimal learning environments and healthy development for adolescents. E-mail: kzullig@hsc.wvu.edu

Molly Matthews is a senior public health research analyst at 2M. She has more than 10 years of experience in practical and effective approaches to support positive lifestyle and behavioral choices, including a broad background in public health analytics. E-mail: mmatthewsewald@2mresearch.com

Scott Huebner is a professor of school psychology at the University of South Carolina. He has served three terms as program director and has previously worked as a school psychologist and staff therapist in a community mental health center. E-mail: huebner@mailbox.sc.edu

References

- Audas, R., & Willms (2001). *Engagement from dropping out of school: A life course perspective*. Human Resources and Social Development Canada.
<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.466.7579&rep=rep1&type=pdf>
 Accessed February 25, 2020.
- Cohen, J. (2006). Social, emotional, ethical, and academic education: Creating a climate of learning, participation in democracy, and well-being. *Harvard Educational Review*, 76, 201–237.
- Cohen, J., McCabe, E. M., Michelli, N. M., & Pickeral, T. (2009). School climate: Research, policy, practice, and teacher education. *Teachers College Record*, 111, 180–213.
- Daily, S. M., Mann, M. J., Dyer, A. M., Smith, M. L., & Kristjansson, A. L. (2020). School climate as an intervention to reduce academic failure and educate the whole child: A longitudinal study. *Journal of School Health*, 90(3), 182–193.
- Daily, S. M., Zullig, K. J., Myers, E. M., Smith, M. L., Kristjansson, A. L., & Mann, M. J. (2018). Preliminary valuation of the SCM in a sample of early adolescent public school children. *Assessment for Effective Intervention*. doi: 10.1177/15345084188157
- Eccles J. S., & Roeser, R. W. (2011). Schools as developmental contexts during adolescence. *Journal of Research on Adolescence*, 21(1), 225–241.
- Every Student Succeeds Act (ESSA), S.117, 114th Cong. (2015).
<https://www.congress.gov/bill/114thcongress/senate-bill/1177/text> Accessed February 11, 2020.
- Hamilton, C. L., Strader, L. C., Pratt, J. G., Maiese, D., Hendershot, T., Kwok, R. K., . . . Haines, J. (2011). The PhenX Toolkit: Get the most from your measures. *American Journal of Epidemiology*, 174, 253–260. doi:10.1093/aje/kwr193
- Haynes, N.M., Comer, J.P., & Hamilton-Lee, M. (1989). School climate enhancement through parental involvement. *Journal of School Psychology*, 27, 87-90.
- Hoover-Dempsey, R.V., Bassler, O.C., & Brissie, J.S. (1987). Parental involvement: contributions of teacher efficacy, school socioeconomic status, and other school characteristics. *American Educational Research Journal*, 27, 417-435.
- O'Malley, M., Voight, A., Renshaw, T. L., & Eklund, K. (2015). School climate, family structure, and academic achievement: A study of moderation effects. *School Psychology Quarterly*, 30(1), 142–157.
- PISA 2015: PISA Results in Focus. (2015). OECD Better Policies for Better Lives
<https://www.oecd.org/pisa/pisa-2015-results-in-focus.pdf> . Accessed February 11, 2020.

- Spengler, M., Roberts, B. W., Lüdtke, O., Martin, R., & Brunner, M. (2016). Student characteristics and behaviours in childhood predict self-reported health in middle adulthood. *European Journal of Personality, 30*(5), 456–466.
- US Department of Education National Center for Educational Statistics (NCES). Public School Enrollment, May 2019. Available at: https://nces.ed.gov/programs/coe/indicator_cga.asp. Accessed February 12, 2020.
- Zullig, K. J., Collins, R., Ghani, N., Patton, J. M., Huebner, E. S., & Ajamie, J. (2014). Psychometric support of the School Climate Measure in a large, diverse sample of adolescents: A replication and extension. *Journal of School Health, 41*, 82-90.
- Zullig, K. J., Collins, R., Ghani, N., Hunter, A. A., Patton, J. M., Huebner, E. S., & Zhang, J. (2015). Preliminary development of a revised version of the School Climate Measure. *Psychological Assessment, 27*(3), 1072–1081.
- Zullig, K. J., Koopman, T. M., Patton, J. M., & Ubbes, V. A. (2010). School climate: Historical review, instrument development, and school assessment. *Journal of Psychoeducational Assessment, 28*, 139–152.
- Zullig, K.J., Ward, R.M., Huebner, E.S., & Dailey, S.M. (2018). Associations between adolescents' school climate and perceived quality of life. *Child Indicators Research 11*, 1737-1753.

APPENDIX A

School Climate Measure Items

Domain 1: Positive Student-Teacher Relationships

Teachers and staff seem to take a real interest in my future
 Teachers are available when I need to talk with them
 It is easy to talk with teachers
 Students get along well with teachers
 Teachers at my school help us children with our problems
 My teachers care about me
 My teacher makes me feel good about myself

Domain 2: Order and Discipline

Classroom rules are applied equally
 Problems in this school are solved by students and staff
 The rules of the school are fair
 School rules are enforced consistently and fairly
 My teachers make it clear to me when I have misbehaved in class
 Discipline is fair

Domain 3: Opportunities for Student Engagement

Students have same opportunity in class to speak, and be listened to, in class
 Students can express feelings and thoughts about school work and life
 Students "different" in any way are treated with respect
 Nobody in my school is excluded from being successful
 Females and males treated as equals at school
 I can participate in a lot of interesting activities at school

Domain 4: School Physical Environment

The school grounds are kept clean
 My school is neat and clean
 My school buildings are generally pleasant and well maintained
 My school is usually clean and tidy

Domain 5: Academic Support

I usually understand my homework assignments
 Teachers make it clear what work needs to be done to get the grade I want
 I believe that teachers expect all students to learn
 I feel that I can do well in this school

Domain 6: Parental Involvement

My parents talk with teachers about what is happening at home
My parents are involved in school activities
My parents are involved in discussions about what is taught at school)

Domain 7: School Connectedness

My schoolwork is exciting
Students can make suggestions on courses that are offered
This school make student enthusiastic about learning
Students are frequently rewarded or praised by faculty and staff for following school rule

Domain 8: Perceived Exclusion/ Privilege

At my school, the same person always gets to help the teacher
At my school, the same students get chosen every time to take part in after-school or special activities
The same students always get to use things, like a computer, a ball or piano, when we interact

Domain 9: School Social Environment

I am happy with the kinds of students who go to my school
I am happy, in general, with the other students who go to my school

Domain 10: Academic Satisfaction

I am happy about the number of tests I have
I am happy about the amount of homework I have